AMSAT News Service Weekly Bulletins
Issue: ANS-203
Date: 1990-07-22
Sources: amsat-ans-1990-ans-203.01.txt

SB ALL @ AMSAT $ANS-203.01
DO-17 RETURNS TO SERVICE!

HR AMSAT NEWS SERVICE BULLETIN 203.01 FROM AMSAT HQ
SILVER SPRING, MD JULY 22, 1990
TO ALL RADIO AMATEURS BT

DOVE-OSCAR-17 RETURNS TO SERVICE!

After a four month sojourn in a computer coma, DOVE-OSCAR-17 returned to service on July 22nd at 02:41 UTC when N4HY commanded its 2M transmitter on. As it passed over the horizon at his QTH, he knew immediately that the tedious and time consumming "auditory" software loading process had been successful and that this time the on-board computer (OBC) would not crash. Later, ZS6HKV heard DOVE's 2M beacon on 145.825 MHz at 06:50 and again at 08:26 UTC over South Africa. ZS6AKV and stations in Zimbabwe heard DOVE sending ASCII telemetry for 2.5 minutes and then stop for half a minute, and then repeat this cycle again and again. At the present time DOVE's RF output power is about 250 mW and will stay at that level until the battery bus voltage reaches 11 volts. Once the batteries charge up to 11 volts, the battery charging algorithm in the OBC will take over and increase the RF output to 1.5 watts. N4HY feels this will happen soon now that DOVE battery charging is back under software control. For the first few days it may be difficult for those with a simple station, i.e., non-tracking antennas, to hear DOVE's 250 mW. Stations with tracking antennas and low-noise preamps will not have any trouble receiving the ASCII telemtry. All are urged to monitor the telemetry during this critical period.

After careful analysis, N4HY has concluded that the problem which made the software reload of DOVE so difficult was caused by an anomaly in the AART (Addressabe Aysnchronous Receiver/Transmitter) board. The AART provides a bus which connects all the various modules of a MICROSAT to the On Board Computer (OBC) and allows them to be controlled individually by the OBC. For reasons not yet clear to N4HY, the AART was not responding to the S-band transmitter, telling it that the OBC had correctly received an Acknowledge packet when software was being loaded using the 2 meter uplink command receiver. Therefore, when N4HY was listening for Acks on his S-band down converter while uplinking, software was being loaded properly but the S-band was not sending the Acks as it was suppose too. The OBC was commanding that the Acks be sent, but the S-band transmitter wasn't "hearing" the command coming out of the OBC. N4HY says he now has an understanding of the problem and he and NK6K will be able to tailor their software to work around this problem. Further, "it is not a dangerous problem and the DOVE module is accepting commands" according to N4HY.

AMSAT-NA wishes to acknowledge the heroic efforts of N4HY and NK6K as they worked through the solution of this time consuming problem. Though this would have been a difficult problem to have solved on a test bench in the MICROSAT Lab, it was an even more difficult problem to work with DOVE several hundred miles in space. This shows once again the ingenuity and innovativeness of the AMSAT-NA MICROSAT Team to solve problems.
/EX
SB ALL @ AMSAT $ANS-203.02
PAKISTANI SATELLITE LAUNCH

HR AMSAT NEWS SERVICE BULLETIN 203.02 FROM AMSAT HQ
SILVER SPRING, MD JULY 22, 1990
TO ALL RADIO AMATEURS BT

BADR-1, the first Pakistani 'amateur' satellite was launched successfully yesterday on 16 July 90 according to SUPARCO (Space & Upper Atmosphere Research Commission - Pakistan). BADR-1 is believed to be a small UoSAT-11/FO-12 class satellite. A Chinese Long March booster was used to place the payload into a low inclination, elliptical Earth orbit.

Amateurs around the world have been hearing BADR-1 transmissions on 145.825 MHz FM. They are comparable in strength and polarization to UoSAT-11. Data modulation or modulation tones have been heard on the FM carrier but data has yet to be interpreted by ANS sources.

Keplerian elements for BADR-1 are carried in this week's AMSAT - ORBS release. Refer to bulletin $ORBS-202.M titled "Orbital Elements 202.MISC."
/EX
SB ALL @ AMSAT $ANS-203.03
OPERATIONS NET SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 203.03 FROM AMSAT HQ
SILVER SPRING, MD JULY 22, 1990
TO ALL RADIO AMATEURS BT

AMSAT-NA Operations Net Schedule Announced

AMSAT Operations Nets are planned for the following times. Mode B nets are conducted on an AO-13 downlink frequency of 145.950. Mode J/L nets are conducted on an AO-13 downlink frequency of 435.970.

Date UTC	Time	Phs	Mode	NCS	U.S. Day
27 Jul 90	0030	130	B	N5BF	Thursday
07 Aug 90	0130	170	J/L	N5BF	Monday
18 Aug 90	0045	170	J/L	N5BF	Friday
28 Aug 90	0100	169	J/L	N5BF	Monday

For information on the amateur satellite program and how you can participate, contact AMSAT-NA at P.O. Box 27, Washington, DC 20044, phone (301) 589-6062, or contact your nearby AMSAT Regional Coordinator
/EX
SB ALL @ AMSAT $ANS-203.04
AO-13 TRANSPONDER SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 203.04 FROM AMSAT HQ
SILVER SPRING, MD JULY 22, 1990
TO ALL RADIO AMATEURS BT

A new Transponder Schedule for AO-13 was put into effect on July 3.

The present transponder schedule for AO-13 is as follows:

Mode-B	: MA 003 to MA 165
Mode-JL	: MA 165 to MA 190
Mode-LS	: MA 190 to MA 195 (Mode S Beacon only)
Mode-S	: MA 195 to MA 200
Mode-BS	: MA 200 to MA 205
Mode-B	: MA 205 to MA 240
Off	: MA 240 to MA 003
Omni Antennas	: MA 240 to MA 060

Cross mode B and S QSOs are possible from MA 200 to 205.

The current attitude estimate:

BLON = 207 and BLAT = +1

AMSAT-OSCAR-10 appears to be receiving sufficient solar panel illumination to support Mode-B transponder operations, therefore, the transponder is available for general use whenever AO-10 is in view at your location. Please DO NOT use the transponder if the signals are FMing. The current estimate of AO-10's attitude is LON 24 deg LAT -9 deg.

Much activity has been heard on AO-10 centering around a popular calling frequency of 145.910 MHz.
/EX
SB ALL @ AMSAT $ORBS-202.O
Orbital Elements 202.OSCAR

HR AMSAT ORBITAL ELEMENTS FOR OSCAR SATELLITES
FROM N3FKV LORENA, TX JULY 21, 1990
TO ALL RADIO AMATEURS BT

Satellite: AO-10
Catalog number: 14129
Epoch time: 90195.42897539
Element set: 533
Inclination: 26.0275 deg
RA of node: 194.6719 deg
Eccentricity: 0.5956727
Arg of perigee: 159.0775 deg
Mean anomaly: 242.2110 deg
Mean motion: 2.05881166 rev/day
Decay rate: -4.10e-07 rev/day^2
Epoch rev: 5329

Satellite: UO-11
Catalog number: 14781
Epoch time: 90196.62757134
Element set: 759
Inclination: 97.9462 deg
RA of node: 248.2520 deg
Eccentricity: 0.0013012
Arg of perigee: 152.5037 deg
Mean anomaly: 207.6821 deg
Mean motion: 14.65494071 rev/day
Decay rate: 1.107e-05 rev/day^2
Epoch rev: 34013

Satellite: RS-10/11
Catalog number: 18129
Epoch time: 90198.06532220
Element set: 256
Inclination: 82.9282 deg
RA of node: 306.4530 deg
Eccentricity: 0.0012828
Arg of perigee: 41.9060 deg
Mean anomaly: 318.3074 deg
Mean motion: 13.72098613 rev/day
Decay rate: 7.30e-07 rev/day^2
Epoch rev: 15354

Satellite: AO-13
Catalog number: 19216
Epoch time: 90196.86706959
Element set: 138
Inclination: 57.0405 deg
RA of node: 145.5100 deg
Eccentricity: 0.6988773
Arg of perigee: 231.4323 deg

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Mean anomaly:      42.7199 deg
Mean motion:    2.09704850 rev/day
Decay rate:      -1.57e-06 rev/day^2
Epoch rev:            1600

Satellite: FO-20
Catalog number: 20480
Epoch time:      90195.61058361
Element set:      93
Inclination:       99.0367 deg
RA of node:       236.9380 deg
Eccentricity:    0.0540983
Arg of perigee:   346.5085 deg
Mean anomaly:      12.2023 deg
Mean motion:   12.83158694 rev/day
Decay rate:       5.20e-07 rev/day^2
Epoch rev:            2026
/EX
SB ALL @ AMSAT $ORBS-202.D
Orbital Elements 202.MICROS

HR AMSAT ORBITAL ELEMENTS FOR THE MICROSATS
FROM N3FKV LORENA, TX      JULY 21, 1990
TO ALL RADIO AMATEURS BT

Satellite: UO-14
Catalog number: 20437
Epoch time:      90197.87148692
Element set:     181
Inclination:       98.6965 deg
RA of node:       273.8932 deg
Eccentricity:    0.0012402
Arg of perigee:    69.5417 deg
Mean anomaly:     290.7095 deg
Mean motion:   14.28658893 rev/day
Decay rate:       2.30e-06 rev/day^2
Epoch rev:            2510

Satellite: AO-16
Catalog number: 20439
Epoch time:      90197.64903266
Element set:      94
Inclination:       98.7017 deg
RA of node:       273.7876 deg
Eccentricity:    0.0012586
Arg of perigee:    69.5283 deg
Mean anomaly:     290.7248 deg
Mean motion:   14.28763438 rev/day
Decay rate:       3.00e-06 rev/day^2
Epoch rev:            2507

Satellite: DO-17
Catalog number: 20440
Epoch time:      90193.23238435
Element set:      97
Inclination:       98.7026 deg
RA of node:       269.3928 deg
Eccentricity:    0.0012811
Arg of perigee:    81.9185 deg
Mean anomaly:     278.3458 deg
Mean motion:   14.28807998 rev/day
Decay rate:       4.20e-06 rev/day^2
Epoch rev:            2444
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Satellite: WO-18
Catalog number: 20441
Epoch time:      90197.63130125
Element set:      98
Inclination:       98.7035 deg
RA of node:       273.8046 deg
Eccentricity:    0.0013278
Arg of perigee:    69.0881 deg
Mean anomaly:     291.1718 deg
Mean motion:   14.28905580 rev/day
Decay rate:       3.04e-06 rev/day^2
Epoch rev:            2507

Satellite: LO-19
Catalog number: 20442
Epoch time:      90197.20278480
Element set:      97
Inclination:       98.7041 deg
RA of node:       273.3972 deg
Eccentricity:    0.0013527
Arg of perigee:    71.0318 deg
Mean anomaly:     289.2319 deg
Mean motion:   14.28974650 rev/day
Decay rate:       3.06e-06 rev/day^2
Epoch rev:            2501
/EX
SB ALL @ AMSAT $ORBS-202.M
Orbital Elements 202.MISC

HR AMSAT ORBITAL ELEMENTS FOR MANNED AND MISCELLANEOUS SATELLITES
FROM N3FKV LORENA, TX      JULY 21, 1990
TO ALL RADIO AMATEURS BT

Satellite: SALYUT 7
Catalog number: 13138
Epoch time:      90197.74428110
Element set:     384
Inclination:       51.5998 deg
RA of node:       154.3018 deg
Eccentricity:    0.0001838
Arg of perigee:    63.8750 deg
Mean anomaly:     296.2388 deg
Mean motion:   15.66207462 rev/day
Decay rate:     1.6306e-04 rev/day^2
Epoch rev:           46948

Satellite: MIR
Catalog number: 16609
Epoch time:      90197.76909049
Element set:     794
Inclination:       51.6112 deg
RA of node:       181.4066 deg
Eccentricity:    0.0010200
Arg of perigee:   150.1851 deg
Mean anomaly:     209.9638 deg
Mean motion:   15.62940244 rev/day
Decay rate:     -7.186e-05 rev/day^2
Epoch rev:           25272

Satellite: HUBBLE
Catalog number: 20580
Epoch time:      90198.01772867
Element set:     135
Inclination:       28.4715 deg
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RA of node:        59.7912 deg
Eccentricity:    0.0005294
Arg of perigee:    82.9895 deg
Mean anomaly:     277.1393 deg
Mean motion:   14.84603906 rev/day
Decay rate:      2.406e-05 rev/day^2
Epoch rev:            1241

Satellite: BADR-1
Catalog number: 20685
Epoch time:      90198.08455059
Element set:       7
Inclination:       28.4931 deg
RA of node:       297.7287 deg
Eccentricity:    0.0562305
Arg of perigee:   138.0890 deg
Mean anomaly:     226.3844 deg
Mean motion:   14.90429605 rev/day
Decay rate:     1.9729e-03 rev/day^2
Epoch rev:              16
/EX
SB ALL @ AMSAT $ORBS-202.W
Orbital Elements 202.WEATHER

HR AMSAT ORBITAL ELEMENTS FOR WEATHER SATELLITES
FROM N3FKV LORENA, TX      JULY 21, 1990
TO ALL RADIO AMATEURS BT

Satellite: NOAA-9
Catalog number: 15427
Epoch time:      90198.22643387
Element set:     603
Inclination:       99.1690 deg
RA of node:       198.7542 deg
Eccentricity:    0.0014262
Arg of perigee:   286.2590 deg
Mean anomaly:      73.7008 deg
Mean motion:   14.12618650 rev/day
Decay rate:       2.61e-06 rev/day^2
Epoch rev:           28822

Satellite: NOAA-10
Catalog number: 16969
Epoch time:      90193.29612781
Element set:     450
Inclination:       98.5976 deg
RA of node:       220.6777 deg
Eccentricity:    0.0013064
Arg of perigee:   192.8958 deg
Mean anomaly:     167.1887 deg
Mean motion:   14.23661383 rev/day
Decay rate:       4.59e-06 rev/day^2
Epoch rev:           19818

Satellite: MET-2/16
Catalog number: 18312
Epoch time:      90198.11989557
Element set:     461
Inclination:       82.5529 deg
RA of node:       266.5629 deg
Eccentricity:    0.0011773
Arg of perigee:   162.0799 deg
Mean anomaly:     198.0776 deg
Mean motion:   13.83662676 rev/day
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Decay rate:       2.19e-06 rev/day^2
Epoch rev:           14712

Satellite: MET-2/17
Catalog number: 18820
Epoch time:      90198.04692239
Element set:     321
Inclination:       82.5462 deg
RA of node:       326.7218 deg
Eccentricity:    0.0015299
Arg of perigee:   239.4096 deg
Mean anomaly:     120.5554 deg
Mean motion:   13.84353018 rev/day
Decay rate:       1.17e-06 rev/day^2
Epoch rev:           12431

Satellite: MET-3/2
Catalog number: 19336
Epoch time:      90197.59313628
Element set:     531
Inclination:       82.5418 deg
RA of node:       256.6208 deg
Eccentricity:    0.0015918
Arg of perigee:   236.6565 deg
Mean anomaly:     123.3041 deg
Mean motion:   13.16898206 rev/day
Decay rate:       3.91e-06 rev/day^2
Epoch rev:            9482

Satellite: NOAA-11
Catalog number: 19531
Epoch time:      90197.51102764
Element set:     313
Inclination:       98.9820 deg
RA of node:       145.8534 deg
Eccentricity:    0.0011656
Arg of perigee:   196.5791 deg
Mean anomaly:     163.4991 deg
Mean motion:   14.11647557 rev/day
Decay rate:       1.70e-06 rev/day^2
Epoch rev:            9310

Satellite: MET-2/18
Catalog number: 19851
Epoch time:      90198.09868503
Element set:     265
Inclination:       82.5193 deg
RA of node:       204.6236 deg
Eccentricity:    0.0012533
Arg of perigee:   282.1149 deg
Mean anomaly:      77.8594 deg
Mean motion:   13.83987018 rev/day
Decay rate:      -4.10e-07 rev/day^2
Epoch rev:            6970

Satellite: MET-3/3
Catalog number: 20305
Epoch time:      90197.94828320
Element set:     172
Inclination:       82.5519 deg
RA of node:       197.0046 deg
Eccentricity:    0.0015380
Arg of perigee:   255.4447 deg
Mean anomaly:     104.4954 deg
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Mean motion:   13.15860884 rev/day
Decay rate:       6.90e-07 rev/day^2
Epoch rev:            3486

Satellite: MET-2/19
Catalog number: 20670
Epoch time:      90197.72398912
Element set:      19
Inclination:       82.5442 deg
RA of node:       265.2229 deg
Eccentricity:    0.0015602
Arg of perigee:   199.1053 deg
Mean anomaly:     160.9523 deg
Mean motion:   13.83839608 rev/day
Decay rate:       1.08e-06 rev/day^2
Epoch rev:             260
/EX
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Tad Cook
Seattle, WA
Packet: KT7H @ N7HFZ.WA.USA.NA
Phone: 206/527-4089
MCI Mail: 3288544
Telex: 6503288544 MCI UW
USENET:...uw-beaver!sumax!amc-gw!ssc!tad
or, tad@ssc.UUCP